SATNAVIX

SATELLITE NAVIX TECHNOLOGIES FZE

Beyond Space. Beyond Boundaries.

TECHNICAL WHITE PAPER

FROM SATELLITES TO COMMERCIAL SERVICES

Turning the World’s Satellites into the World’s Technology.

Earth observation, positioning and communications form the basis for geospatial products, proprietary software and applications for a global market.



SATELLITE SYSTEMS

WHAT SATELLITES SUPPLY

Three kinds of satellite infrastructure support the programme. A user on the ground can obtain an observation, a reference for calculating position, or a path for communicating data.

SATELLITE FUNCTION	WHAT COMES FROM ORBIT	WHAT THE USER RECEIVES
Earth observation	Optical instruments measure reflected light. Radar instruments illuminate the surface and record the returned signal. Each acquisition has a known footprint and time.	A georeferenced scene or derived product. Resolution, weather, sensor geometry and usable coverage determine which changes can be assessed.
Navigation	Global navigation satellite systems (GNSS), including GPS, broadcast timing and orbital information. A receiver uses those signals to compute its own position.	A local fix with time and quality. A phone, receiver or vehicle gateway needs a separate link and permission to report that position elsewhere.
Communications	A compatible terminal exchanges data with a communications network using satellite capacity and ground infrastructure.	A route for messages, telemetry or broadband. Availability, terminal approvals, capacity and cost depend on the chosen provider and market.



FLIGHT HARDWARE / LANDSAT 9

Landsat 9 before encapsulation at Vandenberg in 2021. Its instrument measurements become scenes that can be compared with earlier acquisitions. Photo by NASA/Randy Beaudoin.

SATNAVIX can use open or licensed imagery, existing navigation signals and contracted communications capacity. Establish the permitted uses, service limits and onward-distribution rights for each input.

GEOSPATIAL ENGINEERING

HOW GEOSPATIAL DATA BECOMES A PRODUCT

A satellite scene and a coordinate become useful when the organisation can identify the place, interpret the evidence and authorise an action. Four engineering disciplines connect the source to that decision.

DISCIPLINE	ENGINEERING WORK	DELIVERABLE
Geographic information systems (GIS)	Unify reference systems and feature IDs. Maintain spatial relationships, topology, versions and access across desktop, server, mobile and portal workspaces.	A governed base map or feature service with the source, coordinate reference and validity dates.
Remote sensing and photogrammetry	Register images to common ground control. Orthorectify and mosaic where appropriate. Produce a digital surface model from suitable overlapping aerial imagery.	A dated orthophoto, surface model, coverage mask or reviewed change layer. A surface model includes buildings and vegetation.
Positioning and survey	Specify task tolerance. Capture time, instrument, uncertainty, reference frame and independent control. Integrate GNSS observations, field photos and terrestrial measurements.	A positioned field record or an independently checked survey, with unresolved positions flagged.
Mapped workflows	Link deliverables to an owner’s asset or case ID. Configure inspection, amendment, approval and publication. Export the accepted revision.	An inspection, permit dossier or work order with dates, disposition, accountable reviewer and a usable handover.

QUALITY TRAVELS WITH THE FEATURE

Record a stable source identifier, time of observation, spatial reference, confidence, usable area and rights. Preserve original and transformed data separately. A visible discrepancy stays open until an authorised person accepts, rejects or refers it for a survey.

ADDITIONAL GROUND SOURCES

Mobile mapping can supply positioned street imagery, panoramas and point clouds for road or slope surveys. A building information model supplies design geometry. Keep its survey control, coordinate frame and revision distinct from an image-derived surface or a field measurement.

PRESENT PROGRAMME SCOPE

EIGHT ENGINEERING VERTICALS

SATNAVIX has organised the work into eight verticals. Each has a specific responsibility and a result another team or a customer can inspect. Some support every product in the portfolio.

VERTICAL	RESPONSIBILITY	TYPICAL OUTPUT
NAVIX Earth	Plan observation, register scenes and make consistent map layers across time.	Dated scene mosaic or map layer.
NAVIX Intelligence	Compare evidence, assess confidence and direct field or analyst review.	Reviewed change candidate and reason.
NAVIX Resources	Connect imagery and field geology with land, forestry, agriculture and resource questions.	Sampling brief or disturbance map.
NAVIX Digital	Maintain spatial records, civil workflows and digital twins as assets change.	Accepted asset revision or case decision.
NAVIX Navigation	Locate evidence in the required reference frame and test accuracy for the job.	Surveyed feature and quality record.
NAVIX Connect	Return authorised field records across permitted terrestrial or satellite links.	Acknowledged delivery and exceptions.
NAVIX Labs	Test methods, hardware integrations and model limits against independent evidence.	Validation report and release conditions.
NAVIX Space	Translate collection or communications needs into mission and ground requirements.	Requirements, sourcing decision and handover.

COMMISSIONING THE WORK

The seven product families in the next pages bring these verticals to customers. Each family specifies who uses it, what they can receive and how they can test delivery. Each site still requires its own data rights, operating agreement and acceptance.

PRODUCT 01 / ENTERPRISE MAPPING

NAVIX ATLAS

Atlas is the shared map workspace. A municipal GIS manager can maintain an engineering layer, publish an approved view and give a field team the portion it needs for an inspection.

PREPARE THE LAYERS

Register vector boundaries, imagery, elevation and owner-supplied engineering or building models. Record the source, coordinate reference, date, licence and permitted uses. Compare imported features against control points or a known asset before publishing.

WORKSPACE	USER TASK	DELIVERY OBJECT
Desktop preparation	Clean geometry, reconcile IDs, check topology and review the owner’s reference system.	A versioned working layer and exceptions list.
Server and portal	Control layer access, publish current and historic views, and organise a searchable catalogue.	A permitted service and a record of its source version.
Mobile and dashboard	Prepare an assigned area for a site visit. Summarise observations by location or work status.	A field map or an operations view scoped to a user role.

FIRST INTEGRATION

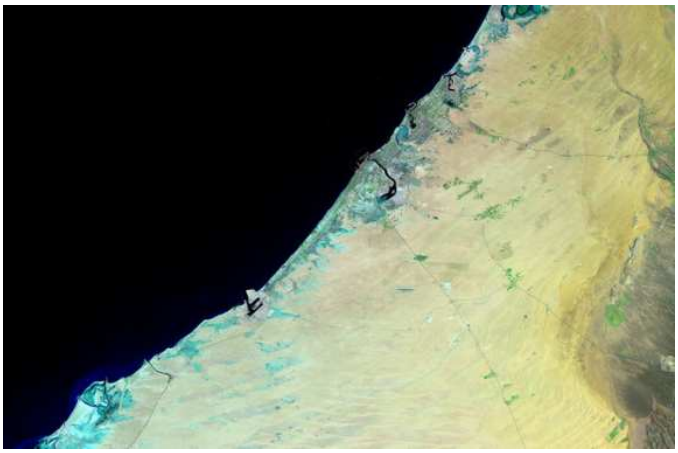
Choose one owner register and one outside layer. Agree where the authoritative copy lives. Test a feature read through OGC API – Features and export an agreed subset to GeoPackage for an independent GIS. Check feature count, geometry, attributes and ID continuity after export.

A placement shown on the working map can be investigated immediately. A disputed boundary stays labelled with its source and review status until the responsible owner resolves it.

PRODUCT 02 / IMAGERY AND CHANGE ANALYSIS

NAVIX EARTHWATCH

EarthWatch compares observations over time, identifies what appears to have changed and hands the result to a reviewer who understands the site.



3 MAY 1991 / LANDSAT 5



17 JUNE 2022 / LANDSAT 9

Reference imagery Dubai coastal development in two comparable Landsat views. Imagery courtesy of the U.S. Geological Survey, EROS Center. The visible offshore changes make a useful reference case.

PROCESSING CHAIN

Catalogue licensed scenes, authorised local captures or public imagery. For aerial collections, an orthorectified mosaic or a surface model may be needed before comparison. Record the processing version and reference system. Mark clouds, shadows, gaps and areas visible on only one date.

REVIEW AND RELEASE

A segmentation or change-detection method can outline a candidate area. The analyst records the dates, affected feature, interpretation and reason for accepting or rejecting it. The release package contains a change layer, source references, usable-coverage mask and review record.

NAVIX Labs samples both flagged and unflagged areas against an independent reference. The pilot owner agrees what constitutes a meaningful change before the method is evaluated.

PRODUCT 03 / LAND AND RESOURCE INFORMATION

NAVIX LAND REGISTER

A land officer, geologist and mine environment manager may look at the same parcel and ask different questions. The register connects the evidence and keeps its authority explicit.



Bingham Canyon copper mine, Utah, photographed from the International Space Station on 20 September 2007. NASA / Johnson Space Center, Expedition 15. The stepped pit and surface disturbance are visible.

Land and tenure	Attach parcel references, permitted-use records, lease boundaries supplied by the authority, survey source and effective dates. Keep competing geometry or documents as separate versions for resolution.
Resources and ecology	Map observed disturbance, rehabilitation areas, exposed geology or forestry compartments against a dated management plan. An exploration polygon can carry a sampling proposal. Samples and assays provide the evidence for a mineral interpretation.
Agriculture	Associate authorised land records with field boundaries, crop-season observations, soil surveys and permitted access. A farmer’s operating area may differ from a cadastral parcel. Preserve both references.

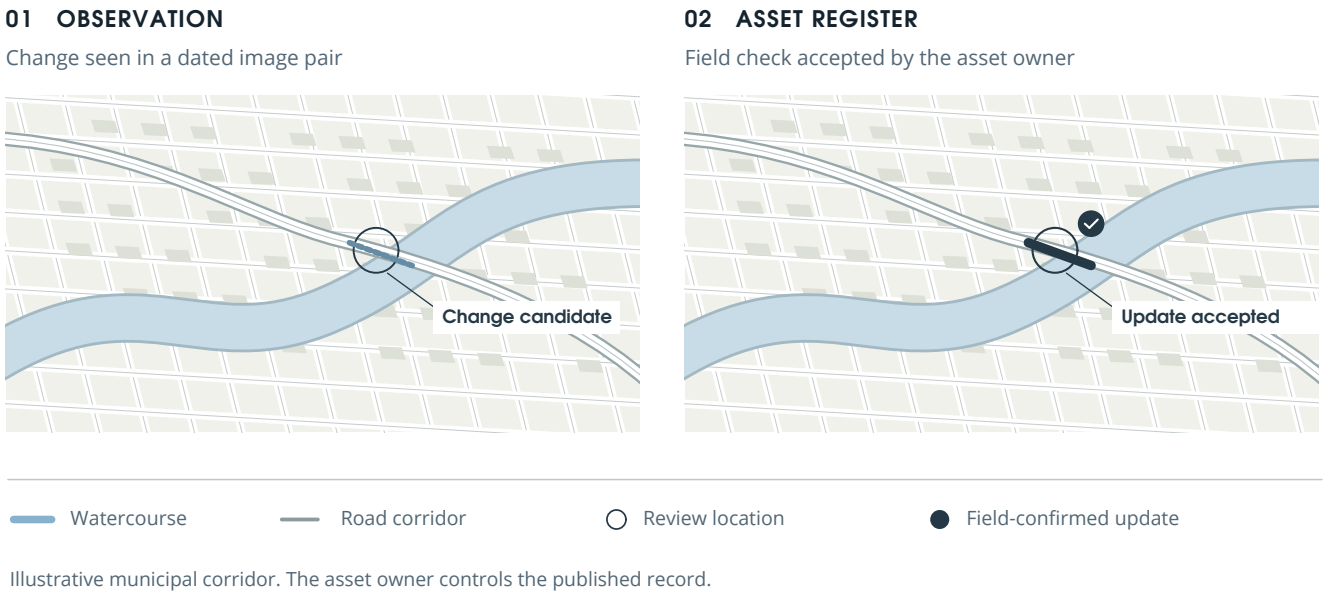
RELEASE PACKAGE

Deliver the agreed land layers, a document index and a register of discrepancies. Each discrepancy identifies the source and date, field owner and disposition. Decisions on legal boundaries remain with the relevant authority.

PRODUCT 04 / CIVIL INFRASTRUCTURE AND WATER

NAVIX ASSET TWIN

An engineer needs to see what was designed, what was built and when the asset register changed. Asset Twin stores those states under a persistent asset identifier.



Asset revision Illustrative corridor update. A reviewed observation can open a case. The owner’s accepted as-built survey supplies the revision to the maintained model.

DATA AND MODEL

Bring the owner’s asset register, design geometry, as-built records and inspection history into a common coordinate reference. The model can hold a chamber, culvert or drainage reach. Its links preserve the source features in the engineering or maintenance system.

WHERE SIMULATION FITS

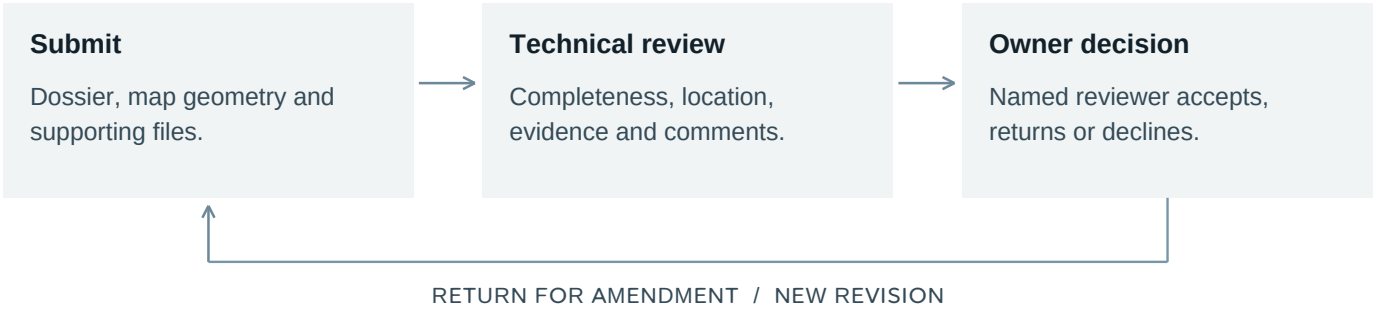
A water authority can associate a basin model, terrain version and assumptions with a scenario. Record the chosen boundary conditions and separate a simulated result from measured water levels. Publish a scenario after the responsible engineering team reviews the inputs.

A pilot export should reconstruct one asset before and after a signed revision, including its drawing, inspection and approval. Large 3D views may use a tiled representation while the asset record retains its engineering precision.

PRODUCT 05 / MAPPED APPROVALS AND CASEWORK

NAVIX CIVIC DESK

Civic Desk connects forms, drawings and decisions to the feature that the application concerns. A reviewer can move from a permit to its location, revision and complete decision record.



Application history A returned application keeps its case ID and opens a new revision. The authority can reconstruct what it reviewed each time.

LOCAL WORKFLOW

Agree which roles may screen, request evidence, approve and publish. Configure the form, routing and bilingual public labels with the participating authority. Back-office staff can see full dossiers. A public-facing service exposes only the fields authorised for release.

OPERATIONS VIEW

A dashboard can group pending cases by neighbourhood, asset class, review queue and elapsed time. Counts are calculated from case events with defined states. A separate publishing step releases an approved decision or notice to the authority’s selected channel.

Test one returned application and one approved application. Check that the revision history, map selection and publication permissions survive a full export for the authority’s records team.

PRODUCT 06 / POSITIONING AND FIELD CAPTURE

NAVIX FIELD SURVEY

Field Survey turns a site visit into a positioned record for sampling, mapping and topographic surveys. The task defines how accurately the feature must be located and how the operator will demonstrate that accuracy.



A surveyor records receiver height during a wetland restoration survey at Ackerson Meadow, California. Recording the measurement method makes the observation easier to reproduce.

USGS, June 2023.

Capture	Download the assigned features, forms and permitted basemap. Capture local ID, coordinates, reference system, time, device or method, uncertainty and any photograph authorised for the task.
Control	Select the equipment and correction service against the job’s tolerance. For a surveyed asset, compare independent checkpoints in the required reference system. Store antenna height or instrument metadata where the method requires it.
Return	Use a unique field-record ID. If the same record is uploaded twice, the second attempt should return the first receipt. A changed finding creates a new version linked to the original.

An operations team may only need the correct site identified. An officially surveyed boundary requires the survey authority, control and acceptance rules applicable to that assignment.

PRODUCT 07 / REMOTE CONNECTIVITY

NAVIX FIELD LINK

A crew can finish an inspection outside coverage. Field Link defines how its record is queued, transferred and acknowledged when an approved connection becomes available.



GPS station P712 near Yellowstone. The positioning antenna and communications terminal serve different functions. Scott Johnson, EarthScope Consortium, 30 July 2025. USGS media record.

CONNECTIVITY OPTIONS

A site may use an existing enterprise network, mobile service or contracted satellite backhaul. For a remote office, establish its service area, terminal installation, available capacity and support arrangements with the licensed network operator.

WHAT THE NETWORK CARRIES

Queue the record ID, attachments, capture time and a file fingerprint. Store the capture time separately from the transfer time. On reconnection, send pending records, verify the attachments and return an acknowledgement from the receiving application.

A FIELD ACCEPTANCE TEST

Interrupt a transfer, reconnect through the permitted network and repeat the same submission. The owner should find a single complete observation, its original capture time and a matching receipt. Failed attachments remain visible to the field supervisor.

GEOSPATIAL DELIVERY

THE GEOSPATIAL WORK PORTFOLIO

These assignments show how the seven product families serve professional and public-sector work. What varies is the underlying reference data, the decision being made, and who has the authority to accept it.

ASSIGNMENT	INPUTS AND FIELD WORK	RECORD DELIVERED
Land, geology and mining	Digitise authorised parcel or concession plans. Use geology and spectral evidence to screen exposed areas for critical-mineral sampling. Compare rehabilitation and disturbance with approved plans.	Parcel discrepancy, field sampling brief or dated mine footprint. Qualified teams check boundaries and assays.
Forestry and environment	Join forest, wetland and watershed boundaries to repeat images, patrols and field samples. Triage canopy disturbance, restoration or suspected pollution.	Reviewed inspection queue and updated inventory with source, date and unresolved findings.
Agriculture and rural services	Combine field boundaries, seasonal crop observations, soils and irrigation visits. Map farm or cooperative assets under stable local identifiers.	Field advisory, crop-condition layer or irrigation work order tied to the growing season.
Water and civil infrastructure	Bring drainage, flood and basin models into the asset register. Relate surveys and inspections to a specified structure or reach.	Versioned model, maintenance case or repair acceptance. Scenario assumptions remain visible.
Planning and civil administration	Map development applications, village plans and authorised place names. Connect the review, local names and public release to an accountable owner.	Signed case history, approved names register, development view or service portal.
Ports and civil aviation	Identify berth and navigation-aid assets. Combine licensed marine and weather feeds where appropriate. Schedule authorised civilian inspection flights and survey missions.	Maintenance assignment, port operations view or flight-work record for the responsible operator.

Professional services include archive digitisation, GIS engineering, topographic and property survey, aerial photogrammetry, and field verification. The governing authority defines the legal status of a survey or registration.

GEOSPATIAL OUTPUT / LAND COVER

READING A WETLAND FROM ORBIT

An environmental planner may need to identify monitoring areas where a proposed development meets wetland habitat. A natural-colour scene helps the reader recognise the coast. A classified GIS layer can be queried by land-cover class.

LANDSAT 8 / 2013



The Zambezi Delta, Mozambique. Sediment from the river is visible offshore in this Landsat 8 view acquired on 29 August 2013.

WORLDCOVER / 2021



Two independent sources with different dates and extents. The 2021 land-cover layer uses Sentinel observations. The panels illustrate data products made from separate acquisitions. A change analysis would require comparable observations on both dates.

PREPARE THE AREA OF INTEREST

Select the owner's permitted study boundary and record the land-cover product version. Clip the class raster to that boundary, retain the original class codes and keep a separate reporting mask. The map displays mangroves, herbaceous wetland and water individually and groups the remaining classes.

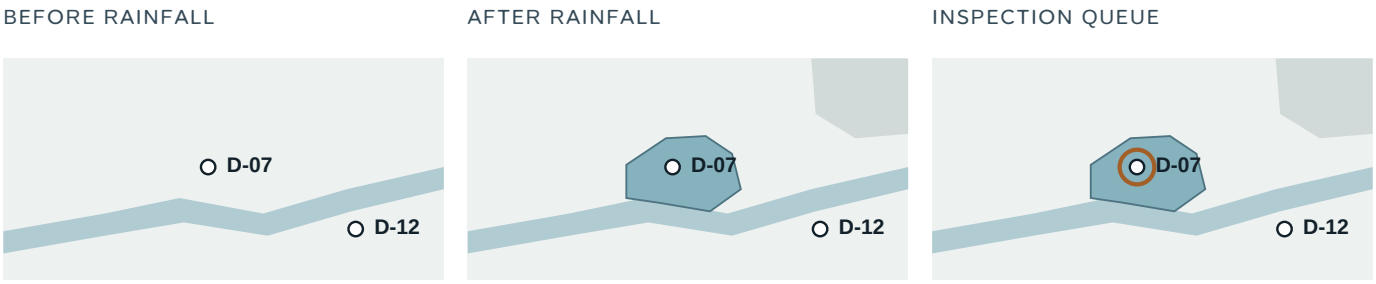
THE DECISION THE MAP SUPPORTS

An analyst can prioritise locations where a proposal crosses mapped habitat and request a field inspection. Return the classified layer, legend, source version and a list of candidate sites. The authority decides the accepted habitat boundary and any action after checking local evidence.

WORKED GEOSPATIAL SERVICE / URBAN DRAINAGE

WHICH OUTFALLS NEED INSPECTION?

After heavy rain, a utility needs to choose which outfalls to inspect. A proposed monitoring service links two satellite observations to its drainage register.



Illustrative map at a common extent. Blue marks water, grey marks obscured ground and the ring marks the outfall selected for a field visit.

ASSEMBLE A DEFENSIBLE COMPARISON

Register the pre-event and post-event scenes to the asset map. Retain acquisition times, footprint, sensor and alignment error. Mask cloud and shadow. Use the terrain model to locate low ground. The utility supplies outfall IDs and the right to use its register. The imagery licence determines which source pixels may be shared.

TURN AN OBSERVATION INTO A WORK ORDER

Delineate newly visible water and compare it with accessible outfalls. An analyst flags D-07 where ponding overlaps its inspection area. A crew checks the inlet and records condition, time and position. The supervisor orders any repair. Obscured sites stay unassessed.

CUSTOMER RECEIVES	ACCEPTANCE CHECK
Dated candidate polygons, coverage mask and prioritised outfall list.	Reopen the GIS export. Trace D-07 to both source dates, the relevant geometry and the reviewer’s decision.
Georeferenced inspection and work-order disposition under the utility asset ID.	Sample flagged and unflagged assets against field observations. Record missed cases and unsupported interpretations.

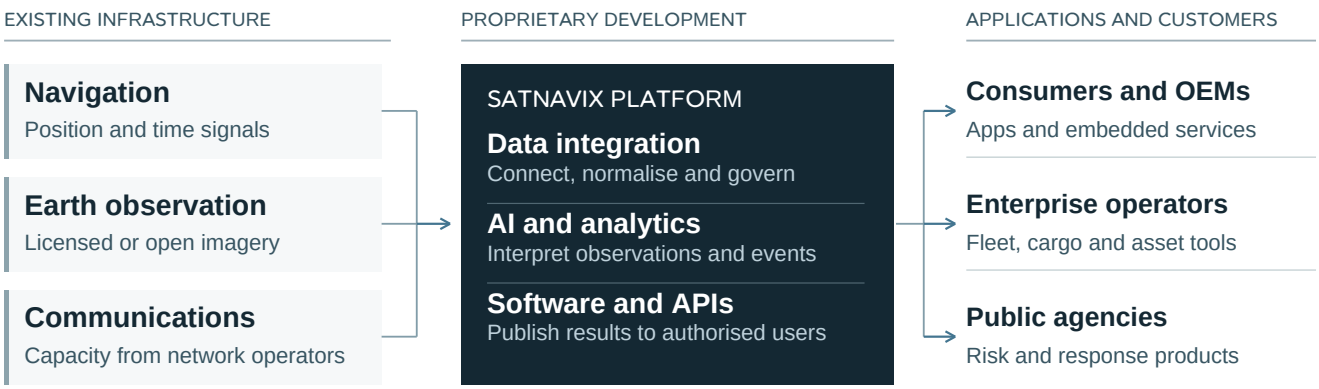
WHO PAYS AND WHAT RENEWS

The drainage operator commissions seasonal monitoring by catchment, with optional post-event analysis. Named users receive reviewed layers and a work-order feed. Premium imagery and event activations follow the licence and the agreed scope.

REFERENCE ARCHITECTURE

THE SHARED APPLICATION PLATFORM

SATNAVIX intends to own its software, data models, AI workflows, analytics, APIs and applications. Its commercial platform connects asset, observation and decision records. Customer records and licensed inputs retain separate rights.



Architecture Existing infrastructure, the proposed SATNAVIX software layer and customer applications. Arrows denote information or delivery interfaces.

Ingest and reconcile	Adapters join device messages, image catalogues and customer records. Preserve source IDs and times, standardise units and coordinates, and flag uncertain matches.
Analyse and serve	Versioned rules and models produce estimates and exceptions. Each result keeps its provenance. An API releases only the records permitted for that customer and use.
Build new applications	Developers receive scoped credentials, sample events and a software development kit (SDK). Versioned APIs, webhooks and metering support third-party apps and OEM distribution.

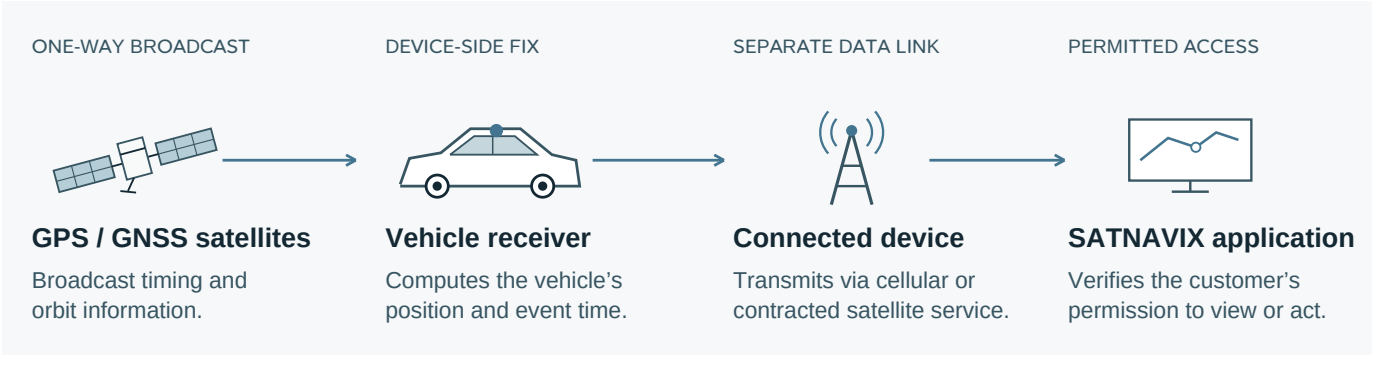
GLOBAL AMBITION

Thousands of potential applications and millions of customers are the ambition. Each new app can reuse identity, rights and delivery services. A buyer and repeat demand are the tests for release.

NAVIGATION AND CONNECTED DEVICES

HOW A CAR REPORTS ITS LOCATION

A navigation satellite broadcasts time and orbital information. A receiver in the vehicle or phone calculates its location. GPS satellites do not track the car or send its movements to SATNAVIX.



WHAT REACHES THE CUSTOMER

A timestamped location report

Asset identifier, position, observation time and accuracy estimate.

If the link is unavailable

Queue the event and show its age.

Signal path A position fix, its transmission and the authorised application are separate operations. GPS.gov describes the one-way signal and receiver calculation.

FROM FIX TO REPORT

The enrolled unit associates the fix with capture time, uncertainty and its device identity. It forwards an authorised report through available cellular service or a compatible contracted satellite link. If offline, a permitted record may be queued. The app displays its original time and distinguishes it from a live position.

DIFFERENT REASONS TO VIEW THE SAME CAR

A dispatcher sees an assigned working vehicle. A driver can share a trip. A recovery officer verifies authority and restricts access to the theft case. Returning or selling the car changes those entitlements.

VERIFICATION

Disable connectivity while the receiver still has a fix. The authorised local device can continue calculating position. The remote app must show its last acknowledged observation until a new report arrives.

DATA EXCHANGE AND PARTNER APIS

A CONTRACT FOR A LOCATION EVENT

Device history, app permissions and invoicing are easier to reconcile when one event keeps its original identity through retries. The example below is a proposed interface record for a fleet service.

FIELD	ILLUSTRATIVE VALUE	HOW IT IS USED
event_id / asset_id	E-1048 / VEH-27	The same event received twice has one delivery acknowledgement and one operational record.
source and time	Vehicle receiver. Captured 10:12 UTC. Received 10:19 UTC.	A delayed upload retains capture time. The consumer sees seven minutes of latency.
position and quality	Latitude, longitude, reference system, uncertainty and fix quality.	A route app accepts or marks the observation stale against the contract’s service threshold.
tenant / authority	Fleet A / dispatch. Time-limited entitlement for an assigned vehicle.	The service checks the caller, permitted purpose and asset before returning any location.
policy / charge key	Dispatch policy revision 3 / active unit VEH-27.	Record the applied policy and service tier. A repeated position report cannot create a second monthly activation.

INTERFACES A PARTNER CAN IMPLEMENT

Publish documented ingestion and read APIs, scoped webhooks and bulk export. Sign or otherwise authenticate inbound device messages, reject unsupported schemas and quarantine uncertain asset matches. Handle duplicates and out-of-order events. Issue a visible correction so the customer can trace each revision.

SEPARATION BY CUSTOMER

Scope tokens and asset IDs to the commissioning tenant. Apply per-role access, retention and deletion rules. Exports and derived features inherit source restrictions. Aggregate licence or data products only where rights, consent and re-identification risk permit.

AI, ANALYTICS AND EVALUATION

FROM RAW DATA TO A PAID DECISION

The commercial test for an AI feature is the decision it improves. SATNAVIX would measure each model against a simple baseline and a customer’s independently observed outcome.

APPLICATION	BASELINE AND EVIDENCE	RELEASE EVIDENCE
Arrival prediction	Compare route-and-speed estimates with actual depot handovers. Use vehicle class, route and time where permitted.	Measure errors by route and conditions. Show freshness and use the baseline when inputs deteriorate.
Crop or damage review	Align dated imagery, mask cloud and shadow, keep sensor metadata and compare candidate polygons to field observations.	Independently inspect flagged and unflagged areas. Report quality by site and season with each reviewed finding.
Asset condition	Compare a rules-based service interval with a sensor-informed alert. Use work orders and inspections as outcome labels.	False alerts, missed faults, time to resolution and whether staff act on the output. Exclude unsupported machine types pending validation.

WHERE HUMAN JUDGEMENT STAYS VISIBLE

A claims officer decides a loss, a surveyor resolves a disputed boundary, and an operations team authorises a repair. Record who reviewed the evidence, at what time and against which source. A model update creates a new version and a validation record.

DATA RIGHTS AND MODEL OWNERSHIP

Keep a register of training, inference and redistribution rights by source. SATNAVIX would own its original code and model work to the extent secured by assignment and licence. Proprietary inputs and customer records have separate terms.

COMMERCIAL APPLICATION CATALOGUE / MOBILITY

MOBILITY, CARGO AND COMMERCE

These applications sell visibility into a journey. Establish which asset was actually observed and how long ago it reported before showing the result.

01 AUTOMOBILES

An enrolled vehicle supplies its own fix for navigation and trip tracking. After a reported theft, the owner can authorise sharing the last-known position for stolen-car recovery.

Driver, automaker or insurer / Per active vehicle or embedded licence

02 TRUCKING

Combine truck location with stops, road restrictions, load requirements and dispatch schedules to optimise routes and predict arrival windows.

Fleet operator / Per active truck per month

03 SHIPPING

Track a container through an attached device, carrier handover or port event. Vessel position provides voyage context when the load is associated with that ship.

Freight forwarder or cargo owner / Per monitored shipment or device

04 AVIATION

Licensed aircraft position reports, flight plans and weather support flight monitoring, route analysis and arrival estimates. Mark gaps and source age.

Airline or aviation operations company / Fleet feed or enterprise term

20 E-COMMERCE

Match carrier scans and permitted courier reports to an order. Publish its delivery window, delay or proof of handover through a merchant API.

Merchant or delivery marketplace / Per tracked order or API tier

ACCEPTANCE QUESTION

Can the user distinguish a directly measured location, a carrier milestone and a predicted arrival when a network report is delayed?

COMMERCIAL APPLICATION CATALOGUE / CONSUMERS AND ASSETS

PROTECTION, PEOPLE AND PROPERTY

A practical location or risk service defines the person allowed to see it, the customer's response and the evidence retained after the case closes.

07 INSURANCE

Join authorised asset telemetry or licensed imagery to a portfolio, identify exposure and route a potential loss for review. The insurer decides coverage and the claim.

Insurer or risk manager / Per monitored asset or portfolio licence

08 PERSONAL SAFETY

An opted-in user shares an emergency location with a chosen contact or contracted response desk for rescue coordination. Show receipt and escalation status.

Individual, family or employer / Safety subscription per enrolled user

09 PETS

An enrolled collar reports its location and can trigger an escape alert. For lost-pet recovery, the household can share the last reported fix for a limited time.

Pet owner or device brand / Per active collar or OEM licence

10 CONSTRUCTION

Enrolled machine position and operating data show where equipment is assigned. Dated imagery and supervisor records document project progress.

Contractor or equipment lessor / Per active machine or monitored site

11 REAL ESTATE

Combine permitted parcel data, dated imagery and planning records to map properties and flag development changes requiring due diligence.

Developer, asset manager or broker / Portfolio subscription or data licence

ACCEPTANCE QUESTION

Can an entitled user reach a useful outcome while a third party, former owner or expired recipient is prevented from viewing location history?

COMMERCIAL APPLICATION CATALOGUE / PRODUCTIVE ASSETS

RESOURCES AND REMOTE NETWORKS

These products use field evidence or service measurements to interpret what can be observed from space. The operating customer accepts the resulting action.

05 AGRICULTURE

Combine crop boundaries and repeat imagery with agronomist observations to target field visits and precision-farming actions. Publish usable coverage and dates.

Grower, cooperative or agronomy provider / Per field, area or growing season

06 MINING

Licensed imagery and geology screen mineral-exploration areas for field sampling. Repeat observations and site plans monitor operations and rehabilitation.

Miner or exploration company / Per concession or site subscription

12 GOVERNMENTS

Compare public infrastructure inventories and authorised territorial or land-use records with imagery and field inspections. Publish reviewed exceptions.

Civil authority or public utility / Enterprise programme contract

13 OIL AND GAS

Combine corridor imagery, facility telemetry and inspection notes to flag a pipeline right-of-way change or remote-equipment anomaly for investigation.

Pipeline or facility operator / Per corridor or monitored installation

14 TELECOMMUNICATIONS

Integrate licensed satellite backhaul, a compatible terminal and service telemetry to connect a remote site. Measure actual availability and support demand.

Carrier, worksite or connectivity integrator / Managed site subscription plus capacity

ACCEPTANCE QUESTION

Can the operator trace the exception to a dated observation or measured service condition and direct the right field team to it?

COMMERCIAL APPLICATION CATALOGUE / AUTONOMOUS AND ENVIRONMENTAL SYSTEMS

MACHINES AND RESILIENCE

Positioning and observation support applications that operate outdoors. Local machines, operators and response agencies retain responsibility for safe decisions.

15 AUTONOMOUS VEHICLES

GNSS, optional corrections and vehicle sensors support localisation. Expose uncertainty and degraded service to the vehicle's independently validated control system.

Vehicle maker or autonomy integrator / Embedded licence per enabled unit

16 ROBOTICS

Outdoor industrial robots use position and approved site maps to record mission progress. The robot's own sensing and safety controller manage local motion.

Robot manufacturer or facility operator / Per robotic unit or software licence

17 DRONES

Position, permitted mission plans and operator telemetry support civilian inspection scheduling, mission management and georeferenced data products.

Survey operator or drone OEM / Per active aircraft or enterprise licence

18 ENVIRONMENTAL PROTECTION

Use repeat land and ocean imagery, field samples and reference records to monitor forests, coastal waters and possible pollution events.

Environmental authority or operator / Area-and-period data service

19 DISASTER MANAGEMENT

Compare pre-event and post-event observations after floods, fires or earthquakes. Use field confirmation to prioritise damage inspections and response resources.

Emergency authority, insurer or relief operator / Preparedness contract or event data service

ACCEPTANCE QUESTION

Does the system report uncertainty, missing coverage and the source time clearly enough for a human or downstream controller to choose the appropriate fallback?

COMMERCIAL ARCHITECTURE

RECURRING REVENUE MODELS

Price the unit the customer can recognise and verify. A truck, a hectare monitored through a season, an embedded activation and an enterprise deployment have different service costs.

CONTRACT	WHAT GENERATES A CHARGE	EVIDENCE AT RENEWAL
Subscriptions	A consumer or fleet pays monthly for an eligible active vehicle, collar, person or workspace. Define pauses, replacements and cancellations.	Active paying units, cohort retention, support cost, usage and repeated customer action.
Technology licensing	An automobile or equipment manufacturer pays for a permitted SDK, API or embedded feature. Define units enabled, support term and redistribution scope.	Design-in acceptance, eligible activation reports, invoices and a repeat model or device order.
Data services	A customer licenses a feed or derived result by asset, coverage area, event, period or metered request. Price input rights and refresh commitments.	Contracted entitlement, successful delivery, unique billable events and renewed use of the output.
Enterprise contracts	An operator or authority pays for integration, managed workflows and a support commitment. Separate one-time deployment work from recurring contract value.	Customer sign-off, ongoing service delivery, collections and a renewed operating term.

METERING POLICY

Use the stable activation or delivery key appropriate to the offer. Store reversals, duplicates and credits. A telemetry-heavy machine should not silently generate an additional subscription each time it reports.

RECURRING REVENUE IS EARNED

A pilot, free activation or unsigned OEM discussion is outside contracted recurring revenue. Obtain the first renewal and reconcile billed units to cash collected before treating the model as repeatable.

DISTRIBUTION AND OPERATING ECONOMICS

HOW THE SERVICE REACHES A BUYER

A fleet subscription offers a practical first test. It can establish whether users act on a service, how much an active unit costs to support and whether a second customer can use the same integration.

ROUTE TO MARKET	IMPLEMENTATION AND EVIDENCE	ECONOMIC TEST
Fleet and enterprise	Enrol a permitted fleet on a repeat route. Compare arrival windows with depot records. Reconcile eligible units, service delivery and one paid renewal.	Contribution per active vehicle after device subsidy, airtime, hosting, channel share and support.
Embedded OEM	Agree compatible gateway or SDK, vehicle ownership transfer, update support and per-unit activations with an automobile or equipment maker.	Time and engineering cost to design in. Compare renewed licence receipts and active units to deployment and warranty costs.
Consumer and retail	A household activates a compatible pet collar. Escape alerts show fix time and quality. The owner can share a recovery view for a limited period and revoke access.	Track activated and paying households, cohort retention, support, returns, network and equipment costs.
Developer and data	Offer documented endpoints, sample events, sandbox credentials and metered delivery. A merchant can embed a shipment ETA without seeing raw driver history.	Verify input and derivative rights, minimum volume commitments, unique billed deliveries, renewals and cash collected.

RELEASE EVIDENCE

Test a lost link, a duplicate device report, a revoked permission and a customer export. Agree what the buyer can inspect at renewal. For a data feed, include unused or cloud-obscured coverage and licensed-input minimums in direct costs.

CAPITAL DISCIPLINE

Compare recurring net receipts with directly attributable service costs, then test whether observed retention can recover acquisition and onboarding costs. Hardware inventory and prepaid data both require working capital.

INTERNATIONAL DEPLOYMENT

A GLOBAL DEPLOYMENT MODEL

SATNAVIX is based in the United Arab Emirates. The Middle East, Africa and India are initial deployment priorities in a worldwide strategy. The architecture can support programmes wherever there is a buyer, usable data and a permitted delivery path.



Geographic orientation. The map identifies initial areas of focus. Project eligibility is assessed with each local customer.

What travels	Software, documented interfaces, asset and event identifiers, model-validation methods, entitlements and metering. Existing clients and new developers can adopt the same release.
What must be local	Agree the buyer, responsible operator, languages, coordinate systems, source rights, network coverage, hosting, payment and acceptance for each deployment.

INTERNATIONAL DEPLOYMENT

MIDDLE EAST

The UAE is the proposed operating base for Middle East delivery. Fleet and vehicle services can share mapping and permissions with municipal and port applications. Each buyer retains control of its own operational records.



MIDDLE EAST

UAE operating base

Oman reference market

United Arab Emirates and Oman are shown in regional context. Boundaries: Natural Earth.

UAE and Oman anchor the proposed examples. Geographic references identify opportunities, without claiming customer deployments.

UAE fleet services	A vehicle receiver computes its fix. An authorised connected device sends it to dispatch. Offer navigation and arrival estimates per active vehicle. A reported theft opens a separately authorised recovery case.
Municipalities and ports	UAE drainage handover and Omani port-asset inspection use shared geospatial evidence and case approvals. Customer records define the responsible authority and asset ID.

MIDDLE EAST / PROPOSED ASSIGNMENTS

FLEET, PORT AND UTILITY DELIVERY

A dispatch manager needs an arrival window. An Omani port operator needs to know which navigation aid requires maintenance. A UAE utility needs the as-built record it has accepted. Each task has a different measurement and contract.

BUYER AND CASE	HOW THE SERVICE WORKS	ACCEPTANCE EVIDENCE
Fleet and vehicle owners	Device reports, route data and planned stops produce an ETA with an observation-age label. An OEM or insurer may distribute a separately authorised stolen-car recovery workflow.	Compare predictions with actual depot handovers. Revoke expired access and reconcile the active-vehicle invoice when a unit changes owner.
Oman port operations	Map berth and navigation-aid IDs. Assign inspections, collect evidence and link maintenance work to the asset. Freight visibility uses a tag or handover event. Vessel AIS supplies ship-level context.	Supervisor accepts one asset record and one work order. Test stale reports and distinguish a direct container event from a vessel position.
UAE municipal drainage	Map a permit and drawing revision. Field Survey supplies positioned as-built evidence to Asset Twin. The municipal engineer accepts the geometry or requests an amendment.	Export an accepted asset and an unresolved difference. Verify the effective drawing, owner ID, survey reference and authorised sign-off.

TERMS THAT NEED LOCAL AGREEMENT

Agree Arabic and English labels where required, approved hosting and data retention, field access and network support. Price fleet subscriptions per active vehicle. Quote port or municipality integration and continuing enterprise support separately.

INTERNATIONAL DEPLOYMENT

AFRICA

Kenya and Ghana illustrate two entry points into a wider African market. An operator can use connected devices to manage a physical delivery, or subscribe to licensed observations of an agreed land area.



Ghana and Kenya are proposed entry markets. Markers indicate representative locations in each country.

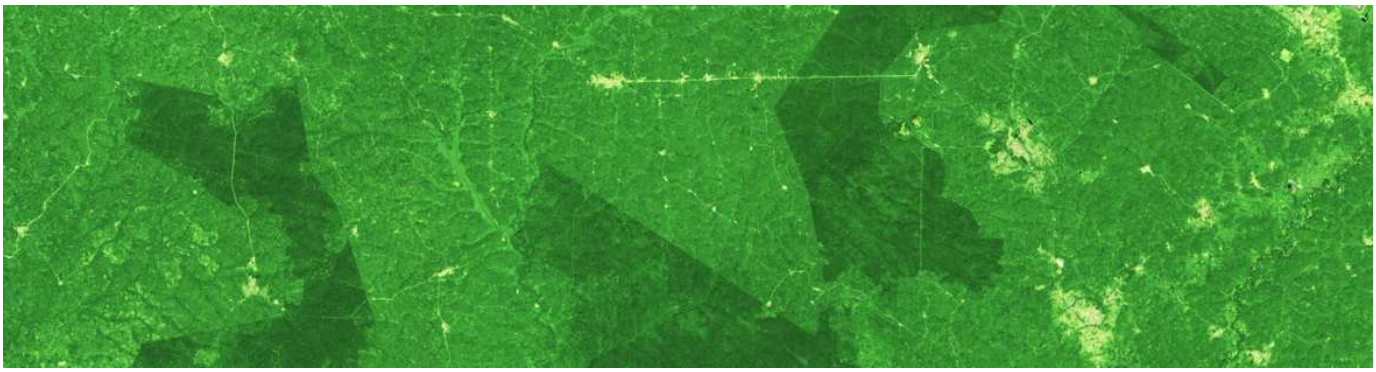
Kenya and Ghana identify the proposed cases. Additional markets would require their own operating partner, connectivity evaluation and data arrangements.

Kenya	A refrigerated distributor combines shipment ID, temperature and position. County water operators can use the same field registry and offline reporting to assign repairs.
Ghana	Agricultural and insurance customers can license field-condition indicators. Forestry teams use compartment-level changes to prioritise site visits and update the forest inventory.

AFRICA / PROPOSED ASSIGNMENTS

FREIGHT, WATER AND LAND COVER

In Kenya, the cost and delay of reporting a shipment vary by route. In Ghana, the useful frequency of a crop or forest observation varies with season and cloud cover. Service terms should reflect those differences.



Bia-Goaso forest district, Ghana. False-colour Landsat 9 observation, 18 December 2023. NASA Earth Observatory / USGS. Documentary imagery.

Kenya cold chain	Associate a calibrated probe, truck and load. Timestamp both fix and temperature locally. Queue gaps, mark late reports and require a delivery receipt. Compare mobile and contracted satellite costs per completed shipment.
Kenya rural water	Link borehole, pump or standpipe to its county ID. A technician submits an offline repair report. The supervisor confirms the right site and receives one record if a transfer repeats.
Ghana crops and forests	Join agreed field boundaries, repeated scenes and local reference samples. A cooperative or insurer can purchase a seasonal crop-condition feed. An adjuster decides claims. Forest staff inspect flagged compartments before approving register changes.

INTERNATIONAL DEPLOYMENT

INDIA

Equipment manufacturers, delivery marketplaces, mining operators and irrigation authorities present different routes to market in India. Shared asset and event records make it possible to reuse the underlying system across them.



Jharkhand and Maharashtra identify the two geospatial cases. OEM and e-commerce services could be trialled with qualified operators in additional locations.

OEM and delivery channels	A dealer can activate a telematics licence for an authorised equipment buyer. A merchant can subscribe to delivery updates by order while keeping personal route histories private.
Field geospatial work	Jharkhand mine operators can compare rehabilitation with approved plans. Maharashtra irrigation teams can record and accept repairs against an identified canal reach.

INDIA / PROPOSED ASSIGNMENTS

EQUIPMENT, MINES AND IRRIGATION

An original equipment manufacturer can offer an embedded service through its dealers. A mine or irrigation operator can buy a mapped operational workflow through an enterprise contract.



Open coal mine, Jharkhand, November 2023. Harshaddu / Wikimedia Commons, CC BY 4.0. Cropped.

Equipment and e-commerce	Enrol an authorised machine by OEM and owner ID. Position and permitted operating hours support utilisation and maintenance. Reconcile active units and transfer the licence at resale. For orders, release a recipient ETA from consented delivery events.
Jharkhand mining	Compare observed disturbance and rehabilitation with the supplied concession and approved plan. The site team samples where needed. A reviewer logs verified exceptions. Survey and assay evidence govern boundary or resource conclusions.
Maharashtra irrigation	A field technician locates a defect on a canal reach. A contractor submits repair evidence. The division engineer accepts the work or requests a new visit. Export the inspection, accepted revision and any outstanding defect together.

LONG-TERM SPACE PROGRAMME

WHEN ORBITAL OWNERSHIP PAYS

Existing networks can support the digital business today as access and distribution agreements are secured. NAVIX Space would advance an owned asset only where verified customer demand and a permanent service or cost advantage justify the commitment.

LAUNCH APPLICATIONS

Buy access as needed

License imagery and capacity. Build the software and win paying users.

→

PROVE REPEAT DEMAND

Compare supply options

Measure demand, coverage, delivery cost and retention across repeat contracts.

→

COMMIT SELECTIVELY

Own capacity if justified

Compare buying, reserving and owning capacity for the same service requirement.

INVESTMENT DECISION

Commit to owned assets only if their incremental value exceeds the full cost.

Include development, launch, operations, replenishment, financing and the value of keeping alternatives open.

Capital sequence Access to existing infrastructure continues as the portfolio develops. Each asset decision requires its own economics.

Contract for access	Identify the unmet service requirement, whether observation frequency, usable coverage, latency, rights or delivered cost. Compare archives, alternative providers and reserved capacity against real assignments and repeat demand.
Hosted or owned assets	Evaluate hosted instruments, an owned observation or communications satellite, ground facilities and, if warranted, a constellation. Compare lifetime cost, operation and replacement, approvals and service continuity against contracted alternatives.
Civilian rocket launch	The long-term ambition is to design, build, operate and launch SATNAVIX civilian orbital rockets for company and customer payloads. This separate programme would require a sustained mission pipeline, its own financing, permissions, qualified operators and independent assessment.

SOURCES

TECHNICAL REFERENCES AND CREDITS

These sources document the underlying systems and independent reference imagery. The service specifications, application designs and deployment examples are proposals of SATELLITE NAVIX TECHNOLOGIES FZE.

TECHNICAL SUBJECT	PUBLIC ENGINEERING REFERENCE
Positioning and communications	GPS.gov, GPS Overview and FAQs. UAE Telecommunications and Digital Government Regulatory Authority, Satellite Services. NOAA SARSAT, 406 MHz Emergency Distress Beacons.
Spatial data and processing	USGS Landsat Missions, Landsat Data Access and Use. Open Geospatial Consortium, SpatioTemporal Asset Catalog, OGC API – Features Part 1, GeoPackage Encoding Standard and 3D Tiles Specification.
Maritime and aviation	International Maritime Organization, AIS Transponders. U.S. Federal Aviation Administration, Automatic Dependent Surveillance–Broadcast. These describe reporting for participating vessels and aircraft.

DOCUMENTARY IMAGERY	ORIGIN AND ATTRIBUTION
Spacecraft and coast	NASA/Randy Beaudoin, Landsat 9 before encapsulation, 16 August 2021. USGS EROS Earthshots, Dubai, Landsat observations from 3 May 1991 and 17 June 2022.
Mine and field surveying	NASA Johnson Space Center, Expedition 15, Bingham Canyon mine, 20 September 2007. USGS, Ackerson Meadow GNSS receiver height survey, June 2023.
Communications and Ghana	Scott Johnson, EarthScope Consortium / USGS, GPS station P712, 30 July 2025. NASA Earth Observatory, Michala Garrison, Ghana’s Declining Forest Reserves, based on USGS Landsat data, 18 December 2023.
Jharkhand mine	Harshaddu, Open coal mine, Jharkhand, November 2023. Wikimedia Commons, CC BY 4.0. Cropped.
Zambezi Delta	Robert Simmon / NASA Earth Observatory, Landsat 8 image using USGS data. ESA WorldCover 2021 v200. Contains modified Copernicus Sentinel data (2021) processed by the ESA WorldCover consortium, CC BY 4.0. Reprojected, regrouped and recoloured.
Maps and diagrams	Cartography uses Natural Earth geographic data. Illustrative technical diagrams and corporate artwork are part of the SATNAVIX programme.

CC BY 4.0 licence

SATNAVIX

SATELLITE NAVIX TECHNOLOGIES FZE

Beyond Space. Beyond Boundaries.

